Achieving safe, reliable hot water

Erratic water temperature in your boat's shower is an annoyance and sometimes a danger. Gilbert Park solves the issue once and for all by fitting a hot water accumulator and thermostatic sensor

I do enjoy a hot shower in my boat and my current vessel, a Trusty T23 displacement motorcruiser, heats the water from the engine up to at least 90°C and it can also achieve a similar temperature from the electric immersion heater when solely on shore power.

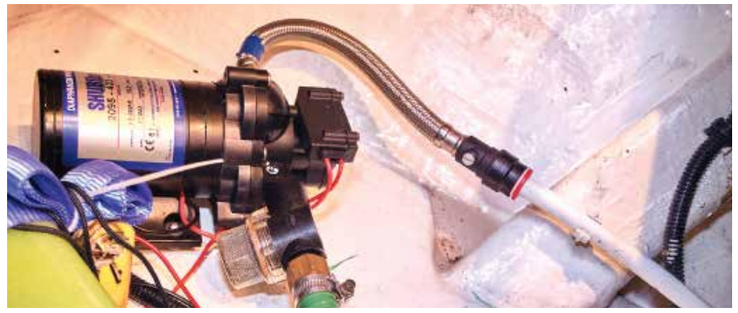
There are three taps on the boat: one in the cockpit, one for the kitchen sink and one in the shower. The first time I showered, I realised something was wrong. The water went from freezing cold to scalding depending on whether the fresh water pump was on or off.

Worryingly the change was very sudden, making a shower impossible.

The scalding hot water was also potentially dangerous, especially if my grandchildren were on board.

So I had two problems to solve. The first was to stop the pulsing of hot and cold water, and the second was to stop scaldingly hot water ever arriving at the shower tap.

Unstable water temperature related to the pump is a well recognised problem that can be solved by fitting an accumulator. This is a pressure vessel that separates water from a bag or diaphragm containing air (or nitrogen) under pressure. Various sizes are available and when I spoke to various people they advised fitting the largest size that you have space for. In my case it was a 5lt accumulator. It should be fitted as near to the pump as possible.



The accumulator should be as near to the water pump as possible. Fortunately, there was room for a 5lt accumulator adjacent to the pump with ready access to the pipework

The parts needed to install the accumulator into the water system. The accumulator has a stainless steel band to hold it in place, secured with four nuts and bolts. There is also the tube spigot at the base and a valve on the top with a black cover. The push fit T-piece and spigot connector along with the connecting hose are also shown

The accumulator has the same Schrader valve on the top found on cars and many bicycle tyres. Cheap and widely available bike pumps with pressure gauges fit on the valve to adjust and monitor it

Under pressure

You have to drain the water tank and hot water cylinder before starting and also ensure the mains electricity is disconnected, if applicable. The plumbing is simple; just a T-piece into the existing system and a tube connecting this to the accumulator.

Once it's all connected you can set the pressure in the accumulator. This should be 2-3psi less than the trigger pressure of the pump.

My pump had a pressure shown on it of 30psi. I thought this was the trigger pressure so set the accumulator pressure to 27psi. When I tried the system it didn't work. Searching the internet I found two installation instructions for my old type of pump. One says the switch on pressure is 15-20psi less than the shut off pressure ie about 10-15psi, although the other document says the same thing but in the specification gives the switch on pressure as 25+/- 5psi. I set the pump to 18psi and the pulsations had gone!

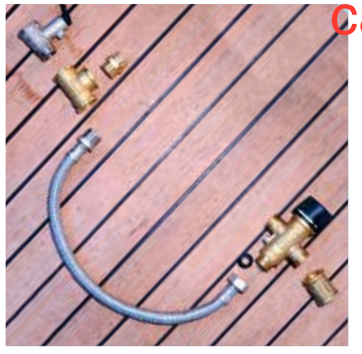
Safety first

The next problem was to stop scalding water from reaching any tap. You can source all the parts for this separately with significant cost savings, but I was unsure of thread sizes etc so bought a kit made by Quick who also made my water heater so I knew it would all fit together easily.

Again, the first thing to do is to make sure that the mains electrical supply is disconnected and the cylinder drained.

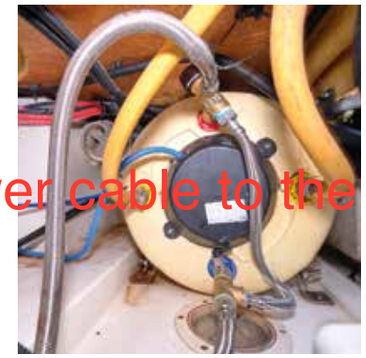
The T-piece, white tubing and bracket for the accumulator all in place

The accumulator in place near to the water pump. The flexible hose connecting the accumulator to the new T-piece in the fresh water system is shown in the top right of the picture



These are the parts needed for a thermostatic mixer. This is a kit made by Quick but you can source all the parts separately and less expensively. When connecting the parts together the threads should be wrapped in PTFE tape and/or a plumbing sealant used to make the threads watertight

The hot water cylinder showing the lower tube feeding cold water into the tank (blue collar). The hot water output is at the top (red collar) and there are two yellow tubes that take hot water from the engine into and out of the cylinder (yellow collars).



Thermostatic mixer valve (top) in place on the cylinder's hot water outlet. Note the blue power immersion heater power cable that goes into the black cover: this must be isolated before starting work

The boat has a Shurflo water pump. It's labelled as having a pressure setting of 30psi, but this is not the switch-on pressure that you need to set for the accumulator. You need to refer to the installation guide/specification sheet to find the switch-on pressure, then set the accumulator to 3- or 4psi less than that

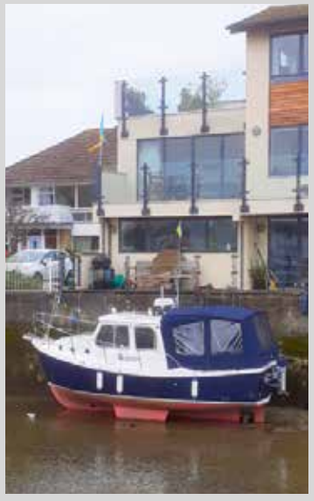
The kit contains a thermostatic sensor T-piece that mixes the hot and cold water along with a female to female connecting sleeve that connects to the hot water output side of the cylinder.

At the cold water inlet your cylinder should have a pressure relief/drain valve: a T-piece is attached to this then with a male to male connector to the cold water inlet pipe. A reinforced flexible hose then goes from the T-piece to the thermostatic sensor to link both hot and cold supplies. Note the shower washer that fits in the connector at the hot water end. It's all too easy to forget to fit it.

I filled up the water tank, bled the system (opened the hot water taps until water flowed freely out), turned on the immersion heater and, 20 minutes later, success! I had a lovely onboard hot shower without any body parts being frozen or fried!

Gilbert Park's Trusty T23

I bought *Merlot* in December 2021 to live on the drying mooring outside of my house at Emsworth on the UK south coast. The Trusty T23 is the only bilge keeled motorboat I have been able to find. She sits upright and I can easily get on and off her, this is important because as I get older (I'm already pretty ancient) mobility will become a problem and I won't be able to manage a bigger boat. I've used her a lot already for trips around the harbour and all along the Solent from Chichester to Totland Bay. I enjoy a hot shower and this is how I found out the problem with the hot water on the boat. I have also fitted radar and AIS as safety measures and as the boat only does 6 knots an autopilot (essential as I sail alone in this boat). Watch this space for articles on all these things and more.



ABOUT THE AUTHOR

Gilbert Park started sailing about 55 years ago in a Mirror dinghy when on holiday in Devon. He then moved up to a Drascombe Lugger and has owned almost the entire Drascombe range up to a Coaster. As he got older using ropes became difficult for health reasons and so he crossed to the dark side and bought a RIB. After that he migrated up through several power boats, and now is on the downsizing route.